

CLAIMS

I Claim:

1. An intelligent digital broadcast scheduling system, said scheduling system arbitrating the  
use of specified broadcast time slots, said broadcast comprising one or more or a combination of  
5 data content comprising audio, video, text, graphics, images, or data; said data content available  
across networks, said scheduling system comprising:

a messaging protocol, said protocol comprising at least: priority indicators, service  
categories, and service classes;

10 an arbitrator, said arbitrator intelligently determining a relative value of specified  
priority indicators, service categories, and service classes of data content entities from a  
group of requesting content providers;

a scheduler, said scheduler collecting and sequencing said data content for broadcast  
based on said arbitrator determinations; and

15 an IBOC network broadcasting said data content as per said sequence.

2. An intelligent digital broadcast scheduling system, as per claim 1, wherein said system  
comprises a hierarchy of gateways, one or more first level gateways arbitrating and scheduling a  
first data content level and one or more second level gateways operatively connected to said first  
20 level gateway(s) and arbitrating and scheduling a second data content level.

3. An intelligent digital broadcast scheduling system, as per claim 1, wherein said one or more first level gateways arbitrating and scheduling a first data content level comprise at least a central gateway receiving requests from a plurality of national/international content providers.

5 4. An intelligent digital broadcast scheduling system, as per claim 1, wherein said one or more second level gateways receive requests from a plurality of local content providers.

10 5. An intelligent digital broadcast scheduling system, as per claim 1, wherein said data content is arbitrated based on a plurality of the following parameters: data content, transmission requirements, data type, time, end user device requirements.

15 6. An intelligent digital broadcast scheduling system, as per claim 1, wherein said data content is prioritized, based on said priority indicators, as one of the following: extreme high priority for immediate data transmission, high priority for transmission at earliest opportunity, normal according to requested repetition rate, and background/low for transmission in slots left free after transmission of messages of extreme high priority, high priority, and normal priority.

20 7. An intelligent digital broadcast scheduling system, as per claim 1, wherein said priority indicators comprise one or more of the following fields: level of service, bit rate requirements, latency grades, or best effort required.

8. An intelligent digital broadcast scheduling system, as per claim 1, wherein said protocol includes message fields comprising a service operator code identifying said data content provider.

5 9. An intelligent digital broadcast scheduling system, as per claim 1, wherein said protocol includes message fields comprising a destination address representing a broadcast, multicast, or unicast scenario.

10 10. An intelligent digital broadcast scheduling system, as per claim 1, wherein said service classes comprise at least basic, preferred, or premium.

11 11. An intelligent digital broadcast scheduling system, as per claim 1, wherein said service categories comprise at least one, or a combination of: administrative, maintenance, advertisement, news (local, regional, national, international, sports, weather, traffic, emergency alert, stocks (local, national, regional, international), entertainment, travel entities, medical, multimedia, audio, logo, or text.

15 12. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes language filtration identifiers.

13. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes periodicity requirements.

5 14. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes validity determinations including periods of validity.

10 15. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes time stamps of said specified data content.

16. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes periodicity requirements.

15 17. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes geographic classifications.

20 18. An intelligent digital broadcast scheduling system, as per claim 1, wherein said message protocol further includes client display execution limitations.

19. An intelligent digital broadcast scheduling system, said scheduling system arbitrating the use of specified broadcast time slots, said broadcast comprising one or more or a combination of

data content comprising audio, video, text, graphics, images, or data; said data content available across networks, said scheduling system comprising:

one or more gateways arbitrating and scheduling first and second data content levels, said first and second data content levels received from a plurality of operatively connected data content providers;

5 a messaging protocol, said messaging protocol used to identify parameters of said requests and comprising at least: priority indicators, service categories and service classes;

10 an arbitrator, said arbitrator intelligently determining a relative value of specified priority indicators, service categories and service classes of data content entities from a group of requesting content providers;

a scheduler, said scheduler collecting and sequencing said data content for broadcast based on said arbitrator determinations, and

15 an IBOC network broadcasting said data content as per said sequence.

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20. An intelligent digital broadcast scheduling system, as per claim 19, wherein said system comprises a hierarchy of gateways, one or more first level gateways arbitrating and scheduling a first data content level and one or more second level gateways operatively connected to said first level gateway(s) and arbitrating and scheduling a second data content level.

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21. An intelligent digital broadcast scheduling system, as per claim 19, wherein said one or more first level gateways arbitrating and scheduling a first data content level comprise at least a central gateway receiving requests from a plurality of national/international content providers.

5 22. An intelligent digital broadcast scheduling system, as per claim 19, wherein said one or more second level gateways receive requests from a plurality of local content providers.

10 23. An intelligent digital broadcast scheduling system, as per claim 19, wherein said data content is arbitrated based on a plurality of the following parameters: data content, transmission requirements, data type, time, end user device requirements.

15 24. An intelligent digital broadcast scheduling system, as per claim 19, wherein said data content is prioritized, based on said priority indicators, as one of the following: extreme high priority for immediate data transmission, high priority for transmission at earliest opportunity, normal according to requested repetition rate, and background/low for transmission in slots left free after transmission of messages of extreme high priority, high priority, and normal priority.

20 25. An intelligent digital broadcast scheduling system, as per claim 19, wherein said priority indicators comprise one or more of the following fields: level of service, bit rate requirements, latency grades, best effort required.

26. An intelligent digital broadcast scheduling system, as per claim 19, wherein said protocol includes message fields comprising a service operator code identifying said data content provider.

5 27. An intelligent digital broadcast scheduling system, as per claim 19, wherein said protocol includes message fields comprising a receiver destination address representing a broadcast, multicast or unicast scenario.

10 28. An intelligent digital broadcast scheduling system, as per claim 19, wherein said service classes comprise at least basic, preferred, or premium.

15 29. An intelligent digital broadcast scheduling system, as per claim 19, wherein said service categories comprise at least one, or a combination of: administrative, maintenance, advertisement, news (local, regional, national, international, sports, weather, traffic, emergency alert, stocks (local, national, regional, international), entertainment, travel entities, medical, multimedia, audio, logo, or text.

30. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes language filtration identifiers.

31. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes periodicity requirements.

5 32. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes validity determinations including periods of validity.

10 33. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes time stamps of said specified data content.

34. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes periodicity requirements.

15 35. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes geographic classifications.

36. An intelligent digital broadcast scheduling system, as per claim 19, wherein said message protocol further includes client display execution limitations.